

SOME LITTLE KNOWN NOCTUID LARVAE OF THE
GENERA CHABUATA, GORTYNA AND
ARCHANARA (LEPIDOPTERA)

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RYE, N. Y.

Chabuata (Tricholita) signata Walk.

Although the larva of this species hibernates in the second or third instar, there is but one brood per season, whereas most of the agrotid noctuids with which the writer is familiar that hibernate as larvæ, have two appearances of adults each season. Hibernation seems to have more hazards to a species when it occurs in the larval form, as against egg, pupa and perhaps we may say adult, though there is all too little data on any of these features. *Signata* larvæ seem to choose their winter quarters with unusual care. They are partial to the dry, hollow plant stems of the succeeding summer, and may at times be found wintering in the stem galls of *Papaipema nebris* Gn., when the latter has been boring *Ambrosia trifida*.

In the warm days of mid-April they sally forth—at night probably—and seem to be general feeders on plantain, dandelion and such early starting plants. Strangely, they yet cling to these galls for a while at any rate, the fresh green frass beside them in the galls proving they have recently fed, although it is in no way likely they get back to the same gall on every occasion. As this *Ambrosia* is apt to grow in thick stands and most of the stems to have been inhabited by *nebris*, when the latter occur at all, this action of *signata* is comparatively simple.

Occasionally a curious thing happens. In certain recurring years a large percentage of *nebris* larvæ fall to the vipionid parasite, *Microplitis gortynæ* Riley. Shortly before maturity, about August first, the host succumbs in its gall and thirty or more *gortynæ* larvæ emerge and spin up in an encircling band of ribbed cocoons around the dying host which has fallen to the

bottom of the gall, just above the ventilating opening. In time some dipterous scavengers finish the *nebris* pellicle and the more or less complete ring of parasitic cocoons remain clogging the burrow, through the winter and on to the last days of June, when, if all has gone well with *gortynæ*, they emerge. If, however, a *signata* larva has happened on such a situation in seeking a hibernaculum, they find the parasitic cocoons an incumbrance in gaining ingress and make a way for themselves by gnawing off a section thereof, to the destruction of such puparia as fall in the way. This would seem to be a case where a caterpillar gets back at a parasite, does a saving act for others of its kind even though not its own, but there are complications which affect such a concrete result. From their long exposure, August to June, the *gortynæ* cocoons become a ready target for a number of other hymenopterous parasites, which thus perform a secondary role. *Hemiteles tenellus* Say, *Astomaspis fulvipes* Grav., *Eupteromalus viridescens* Walsh, *Gelis microplitidis* Gahan and an undetermined *Ethelurgus* and *Thysiotorus* species (these determinations by Mr. A. B. Gahan) are likely to be inhabiting these cocoons to a considerable degree, so to what extent the *Chabuata* in its onslaught upon the interfering cocoon cluster may be aiding or abetting the *Papaipema* situation may never be known. Finishing the larval career about June first, *signata* enters the ground for pupation and does not emerge as a moth until August.

Mature larva. Typical of the Hadeninæ in that the body widens from the head to the eleventh segment, where the bulk is greatest, with the last two joints bent ventrad and their diameter decreasing. Hence the larva assume a slightly humped condition at the eleventh somite. The color is an even pale brown all over without contrasts; a vague mottling in deeper tone exists, which is more noticeable in the earlier stages.

Head normal, rounded, shining, brown and mottled, setæ about mouth parts most developed, width 2.9 mm. Thoracic legs concolorous, setæ prominent, crotchets of fourth abdominal leg number 28.

The cervical shield bears prominent setæ, is polished, of lighter tone than head and nearly as wide; anal shield concolorous and

less chitinized. Spiracles elliptical, black-ringed, those on joints one and eleven are slightly larger. Of the tubercles, III, IV and V are the best defined on the abdominal segments, equal, IV being relatively close to the spiracle and about one-sixth its size. Larval length 41 mm.

Gortyna stramentosa Gn.

The larval procedure with this species was first encountered at Montreal as the result of a painstaking and long continued effort by Mr. A. F. Winn, who published entertainingly of the discovery at the time, 1915.¹ The moth had been a light capture there for many previous years, and its larva proves to be very abundant when the habit and foodplant, *Scrophularia leporella*, become known. Southward, at the latitude of New York it is an uncommon insect, but two occurrences of the larva have been noted at Rye. It probably follows the Canadian zone westward in considerable abundance, and the larva has been encountered by Mr. G. P. Engelhardt in Colorado, where a closely allied species of *Scrophularia* was attacked. Associated with it as a parasite, even in Colorado, is *Mascicera senilis* Meig., a most important check to such borers. Upon our own observations this Tachinid has positive record of attacking twenty-two allied species, and according to information, it finds the introduced Corn Borer also legitimate plunder.

In habit *stramentosa* is more truly a borer in the root of its foodplant than its ally *immanis*, which works at the crown of Hop. The first stages undoubtedly show a transverse, ringed color effect similar to *micaceæ*, *immanis* and others, the characteristic gortynid ornamentation.

Mature larva. Stout and cylindrical, the final instar not differing from the penultimate except in size. A slightly ringed appearance yet exists. The color is brownish, paler at the interspaces of the somites. Head normal, width 3.3 mm. Cervical shield is a shining plate, irregularly edged anteriorly with blackish. At the tubercles the plates are well evident; specific individuality is shown at III on abdominal joints where the plate

¹ Report of the Entomological Society of Ontario for 1915, p. 43.

is very close to the upper, anterior margin of the spiracle—this to a greater degree than with its near allies; III, IV and V almost equal the spiracle. On joint eleven, I and II much increased, as is also III on joint twelve. Anal plate prominent, covering the last somite. Crotchets number 14. Larval length 42 mm.

Archanara oblonga Grt.

Collectively, the three species of *Archanara* (Nonagria) occurring in the eastern United States can be considered as having larvæ which subsist in semi-aquatic conditions and are pronounced in their choice of respective foodplants. They are miners in stem and rootstock, pupate in their burrows, emerge shortly as adults and are single brooded in the north at any rate. It may be noted the pupæ rest normally upright in the galleries, whereas an allied European species is recorded as reversing this position. Dr. J. B. Smith, 1903,² has detailed the unusual structures of the adult, the remarkable clypeal horn, also the female ovipositor and its appendages wherewith a hibernaculum is made for the overwintering eggs. At that date the life history of *oblonga* only seemed known.

Numerous workers have contributed details here; Claassen, 1921,³ summarizes the life history and larval details and gives the principal bibliography. While *Typha latifolia* is the generally recorded foodplant, the writer has found *T. augustifolia* more frequently tenanted by the species locally. From the very short pupal period, averaging ten to twelve days, it perhaps sets the record for any single brooded noctuid of its zonal fauna in the rapidity of this change.

Archanara laeta Morr.

Larval relationship indicates that this species is very close to the preceding, and that it should follow it in the lists. *Sparganium eurycarpum* is the foodplant with which it has been thus

² Revision of the Boreal-American Species of Nonagria. Proc. Ent. Soc. Washington, Vol. V, No. 4, 1903.

³ Cornell University Agricultural Experiment Station Memoir 47.

far associated, but it may also take up with other species of the burr-reed. Larval procedure is similar to that of *oblonga*, and maturity is reached about the end of July. Pupation is in the larval tunnel, lasts fifteen to eighteen days, with emergence dates Aug. 14–24. The species was rather common about Buffalo, N. Y., at the proper ecological environment in 1916, according to Mr. H. G. Baumann. Though solitary individually, they nevertheless occur in well defined colonies, the progeny of a single parent doubtless.

Mature larva. A general similarity follows through the various instars; at maturity there exists a stout, cylindrical, naked larva of dull, raw, umber brown color, with a dorsal and subdorsal continuous line easily traceable, defined as paler markings. Head normal, rounded, setæ weak or absent, labrum tipped with black, otherwise concolorous yellow brown; width 2.4 mm. Cervical shield is heavily chitinized, as wide as head and similar in color. Anal shield also similar but proportionately reduced. The tubercle plates are the merest black dots, bearing mostly minute black setæ requiring considerable magnification for discernment; III and IV on the abdominal joints are best defined. They are estimated to be one-tenth the size of the spiracle. The latter are flattened-elliptical in form, and black-rimmed. Length of larva 39 mm.

Archanara subflava Grt.

The foodplant is the giant bulrush, *Scirpus occidentalis*, and the larval work is confined to the crown and rootstock in the later stages, though they yet ascend the hollow stems on occasion. Pupation occurred in the root tunnel in breeding boxes, but its duration was not definitely determined. Larvæ occur scatteringly—not in apparent colonies like the allies, and have been met with but once, at Wilmington, Del.

Mature larva. In life the larva is a unicolorous green, due to the fluid contents of body; the inflated skin is pale brownish. The body is cylindrical and so much slenderer it seems not to be closely related to its allies. Head small, normal, rounded, mottled on occiput, shining yellowish brown; width 1.7 mm. The

shields are of the body tone and are not contrasting. Tubercles well defined, on thoracic joints two and three, Ia, Ib, IIa, IIb and III are about equal and in almost perfect alignment, a trifle oblique to the axis of the body; IV on abdominal segments is about half the size of the spiracle; the latter flattened-elliptical, black-ringed. Crochets of the proleg at joint ten number 22. Length of larva 37 mm.

BUTTERFLY COLLECTING BY SHAH ABBAS THE GREAT

Sir Anthony Sherley, an English navigator who visited Persia in 1599 and was received hospitably by Shah Abbas the Great writes as follows of his conversation with the king, the account having been taken from "A briefe Compendium of the Historie of Sir Anthony Sherleys Travels into Persia," in the ninth book of "Hakluytus Posthumus or Purchas His Pilgrimes" (vol. VIII, pp. 375-449).

"At Hisphaan, said the King; we shall have leisure both to deliberate and resolve of some good things; and with that called some other, who entertayned him with discourses of Hunting, and Hawking, in which he is much delighted, and useth them with great magnificence; never going to any of those sports, but that he carrieth forth above five hundred Dogs, and as many Hawkes, nothing rising before him but it is game. For Flies, he hath Sparrows; for Birds, Hobbies and Marlins; for the greatest sort, some Hawk or other; and for Roe-deare Eagles; he hath particular Agaes for his Hawkes and Dogs, and other Officers to them a great number."

Robert Burton in his "Anatomy of Melancholy" (1628) refers to Sherley's account thus—"The Persian kings hawk after butterflies with sparrows made to that use, and stares: lesser hawks for lesser game they have, and bigger for the rest, that they may produce their sport to all seasons."—H. B. W.